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ABSTRACT

The belief of educational researchers that teacher self-reports cannot be trusted, and the provision of validation evidence for a teacher self-report questionnaire on open education are the purposes of this study. Data were collected in two classes in each of eight schools, which were a stratified (by architecture and by programmatic openness) subsample of the 72 schools involved in a larger study. The data for each of the 16 classes included reports from teachers (Dimensions of Schooling Questionnaire--DISC) and two kinds of data from each of three or four different observers. One kind of observer data paralleled that provided by the teachers; the other consisted of low inference observations of students and teachers. A correlational analysis was made of three sets of variables. Findings support the conclusion that teacher self-reports may constitute better evidence about teaching than previously believed. Also, these results support the use of DISC as a measure of several important dimensions of school program. (Author/GK)

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The Accuracy of Teachers' Self-Reports: Evidence from an Observational Study of Open Education

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Abstract

This study had two purposes: (i) to question the belief of educational researchers that teacher self-reports cannot be trusted, and (ii) to provide validation evidence for a teacher self-report questionnaire on open education (DISC). Data were collected in each of two classes in each of eight schools, which were a stratified (by architecture and, within architecture, by programmatic openness) subsample of the 72 schools involved in a larger study. The data for each of the 16 classes included reports from teachers (Teacher-DISC) and two kinds of data from each of three or four different observers. One kind of observer data paralleled that provided by the teachers (Observer-DISC); the other consisted of low inference observations of students and teachers.

A correlational analysis was made of three sets of variables -- scores on the items of Teacher-DISC, scores on the items of Observer-DISC, and 11 variables constructed from the low inference observations. The correlations between teachers' and observers' scores on corresponding

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items of DISC were moderately high, and were higher on average than the correlations for non-corresponding items of DISC. The 11 variables derived from the low inference observations exhibited similar patterns of correlations with the items of Teacher-DISC and Observer-DISC. The correlations in these patterns were of moderate size and most were negative.

The findings of this study support the conclusion that teacher self-reports may constitute better evidence about teaching than previously believed. Also, these results support the use of DISC as a measure of several important dimensions of school program.

Introduction

Measures of teaching, which are numerous and varied (Borich, 1977; Dunkin & Biddle, 1974), can be characterized by the source and the kind of data on which they are based. Sources include the teachers themselves and observers. The kinds of data include those that devolve from relatively low level inferences by the source (e.g., the teacher reports whether or not a particular text book is used; an observer notes whether or not a teacher is at the blackboard at the time the observation is taken) and those that devolve from relatively high level inferences by the source (e.g., either teacher or observer rates class discipline on a scale from strict to lenient).

Studies of teaching that include data from only one source and of only one kind are open to challenge. Would the conclusions drawn in such studies be confirmed in data from another source or in data of a different kind from the same source? Stated differently, the question is whether or not one kind and source of data provide a valid impression either of the teaching that takes place in a given class or of the differences in teaching experienced by different classes. This question seems especially pertinent when teachers are the data source.

Within the research community, teacher self-reports are mistrusted, an attitude that is reinforced by the available research. Hook and Rosenshine (1979), after reviewing 11

studies of teaching at the primary level, concluded that "... in practice , one is not advised to accept teacher reports of specific behaviors as particularly accurate" (p. 10). Earlier, Chall and Feldman (1966) had come to the same conclusion in a study of elementary teachers' professed adherence to a method of teaching reading. Studies of teaching at the post-secondary level also reinforce a mistrust of teacher self-reports. After reviewing these studies, Kulik and McKeachie (1975) advance the opinion that "For ordinary mortals, the outcome of self-evaluation is probably as much a matter of needs, wishes, and motives as it is a case of teaching skill" (p.229).

Another consideration about observational data is that surprisingly little seems to be known about the relationship between low inference and high inference observations. There does not seem to exist a frequently cited study or review of literature on this topic. All that we have found is the recommendation to use both kinds of observations in order to minimize the distortions possibly present in results based on one kind of observational data (Good, Biddle & Brophy, 1975, pp. 38-39).

The foregoing considerations about research on teaching provide a context for the study reported here. We administered a self-report measure of program openness or informality, the Dimensions of Schooling Questionnaire (DISC) to a small group of teachers. Observers then went

into the classes of these teachers on several different occasions and recorded both low inference observations and high inference ratings, the latter to a subset of the items of DISC. Initially our objective was to obtain additional evidence of the validity of DISC. Somewhat later we realized our data speak to the more general issue of the degree of congruence that can be realized (i) between teacher self-reports and the reports of observers, and (ii) between low inference observational variables and measures resulting from higher level inferences.

Method

Design and Instrumentation

The design for this investigation was superimposed on the design for a larger study, of which this formed a part. In sampling schools for the large study, all the publicly supported elementary schools located within a fifty-mile radius of Toronto's city center had been stratified according to type of architecture and school board. The architectural stratification contained three categories: (i) closed, for schools comprised of self-contained classrooms; (ii) open, for schools marked by an absence of interior walls; and (iii) mixed, for buildings that originally had been closed and to which an open area had been added. The stratification by school board included 17 categories; these were defined by political subdivision

(i.e., county) and whether the board was for the Roman Catholic Separate Schools of the region or for the other publicly supported schools. Schools were sampled at random from each cell of the stratification. The number of schools chosen from a cell was that fraction of 80, the number of schools in the sample, that the number of schools in the cell was of the total number of schools in the population. Seventy-two of the 80 schools continued to participate in the large study throughout the data collection phase, which extended over a period of three years.

A task of the large study was to obtain measurements of programmatic openness. This was done by administering to each classroom teacher a self-report instrument called the Dimensions of Schooling Questionnaire (Teacher-DISC). The version of DISC used in this study contained 32 items. The first eight items dealt with general features of either the administration of the school as a whole (e.g., Item 1 -- Assignment of Students to Teachers -- asks who it was, administrators, teachers, parents or students, had responsibility for deciding how students would be assigned to teachers, and Item 6 -- Rule Enforcing -- asks who it is, administrators, teachers or students, have responsibility for enforcing the rules governing school behaviour) or the administration of the class (e.g., Item 4 -- Free Time -- concerns the amount of time during a typical school day in which students are free to pursue their own interests, and Item 8 -- Content Organization -- is addressed to the issue

of how the curriculum is organized, whether by traditional subjects or by integrated groupings of traditional subjects). The final 24 items of DISC address issues that are more-or-less specific to instruction in a subject or integrated group of subjects. The items in this part of DISC include the following: Item 10 -- Development of Materials --to what extent are home-made materials used instead of published materials? Item 12 -- Student Mobility -- do students have to ask permission of the teacher to move about the class area? Item 15 -- Student Pacing -- do students work at their own pace or at a pace set by the teacher for the whole class? Item 20 -- Other Adult Involvement -- are parents and other adults regularly involved in the instructional program? Item 23 -- Teacher Focus -- to what extent does the teacher address individual students as opposed to groups of students? and Item 26 -- Subgrouping Stability -- are the subgroups that are formed for teaching a particular subject fixed for the whole of the school year? Each teacher's responses to these items were scored and summed to yield a total score, which in theory could range between 0 and 32. The scores of all the responding teachers in a school were averaged to form the programmatic openness index for the school. (See Traub, Weiss, Fisher & Musella, 1972, for a description of the rationale underlying DISC, its item content, the procedure devised for responding to it, and the procedure followed in scoring the responses made to DISC.)

A subsample of eight schools was selected for participation in this investigation. Three of these schools were open in architecture, three were closed and two were mixed. The choice of the three architecturally open schools was subject to two constraints: (i) One had to have a relatively high score on programmatic openness, as judged against the distribution of programmatic openness scores for all the architecturally open schools, another had to have a relatively low score, and the third had to have a middling score. (ii) This was to be the first time that these schools had been asked to participate in an observation study. (As noted previously, the large study of which this investigation was a part extended over a period of three years. Observation data were collected in eight or nine schools each year. The observation data that are the subject of this study were obtained in the third year.) Within these constraints, the choice of schools was made at random.

The procedure by which the three open schools were chosen for this observation study was also followed in choosing the three closed schools. This procedure was modified for choosing the two mixed schools. The distribution of program openness indices for these schools was divided into only two groups, high and low, and one index (i.e., one school) was chosen from each group.

Within each of the eight schools that participated in this study, two classes were selected for observation. This choice was made subject to two constraints: (i) The classes had to be comprised, primarily if not totally, of fifth-grade students, and (ii) the teachers had to be willing participants. In the event that these constraints were satisfied by more than two classes in a school, the choice among classes was made at random.

It was intended that each class should be observed on four different occasions, that two of these occasions should be mornings and two should be afternoons, and that the observer for each occasion should be different. These design objectives were imperfectly met, as can be seen from a study of Table 1. In addition, it was intended that during an observation period the class should be working on language arts, mathematics, science or social studies (or any combination of these subjects). The observation occasions were distributed over a period of two months, December and January.

Insert Table 1 about here

Two kinds of observational data were collected in each classroom on each observation occasion. One kind required low level inferences. Some of these inferences pertained to teachers, and referred to such things as the location of the

teacher in the classroom, his or her proximity to students, the activity in which he or she was engaged, and the tools and materials he or she was using, if any, at the time. The remainder of the inferences pertained to individual students, and referred to such things as location in the classroom, proximity to the teacher, activity, and tools and materials in use.

A specially designed form was prepared for observers to use in recording their low inference observations. A copy of the form contains space for the observer to record three observations of the teacher and the observations of six students. The procedure followed by the observer in completing a copy of the form involved the following steps:

(i) record some identifying information and general data.

(ii) record the data from an observation of the teacher.

(iii) choose a student (following a designated counting procedure, within which was embedded a random number), observe the student and record the data from this observation.

(iv) choose and observe a second student, and record the data from this observation.

(v) observe again the teacher and record the data from this observation.

(vi) choose and observe, in turn, a third and a fourth student, and record the data from the observation of each.

(vii) repeat steps (v) and (vi) for a third observation of the teacher and observations of a fifth and a sixth student.

(viii) finish the form by entering some additional general data.

Once a copy of the observation form had been completed, the observer took another copy and completed it. Thus, copies of the observation form were completed, one after another, for the duration of the observer's time with the class. (The number of forms completed in each observation session are reported in Table 1.)

Interrater agreement in the use of the observation form was established at 85 percent (on average over observation form categories and pairs of raters) for a half-day session.

The second kind of observational data obtained in this study demanded higher inferences of the observer. Twenty-one items from Teacher-DISC were identified, a priori, as pertaining to characteristics of the class that could be rated after a period of observation as brief as one-half of a school day. Some items of Teacher-DISC (e.g., Assignment of Students to Teachers, Rule Making, Defining General Objectives, Promotion Timing) are obviously not amenable to rating by observers because the activities referred to in these items are undertaken at specific times in the school year or they are performed in settings other than the class. (The numbers and names of the items in

Observer-DISC, as they appear in Teacher-DISC, are given in Tables 4 and 5.) At the end of a half-day observation period, the observer completed a copy of Observer-DISC for the class.

In addition to these data, responses to Teacher-DISC were available for 14 of the 16 teachers. (Unfortunately, no check was made at the time teachers were being recruited for the observation study of whether or not they had completed Teacher-DISC earlier in the school year.)

Data Analysis

In the first stage of analyzing the low inference observational data, a set of 37 variables was defined. To do this, the categories of observer responses that were included in the observation form were considered and variables were tentatively defined in terms of these categories. Most of these measurements were percentages (e.g., the percentage of the number of observations of the teacher when she or he was located at the blackboard as opposed to elsewhere). The remaining measurements were either means (e.g., the mean over observations of the number of students seen to be in the class area) or variances (e.g., the variance over observations of the number of students seen to be in the class area). The data were then tabulated separately for each teacher to confirm that the observed proportions were not extreme (i.e., less than 0.05

or greater than 0.95) for more than one or two teachers. Tentative variables that failed this criterion were discarded. Measurements were then calculated for each class on each variable for each (half-day) observation occasion.

The second stage in the analysis of these observational data was to obtain very crude estimates of their generalizability (reliability) coefficients. The objective was to gain some idea of the utility of each variable in differentiating classes. This was done by assuming that classes and observers had been completely crossed, estimating missing observations from the main effects for classes and observers as determined from available data, and, on the assumption that both classes and observers had been randomly sampled from their respective populations, obtaining ANOVA estimates of the components of variance associated with classes, observers and residual. Generalizability coefficients were then obtained as the ratio of the components of variance for classes to the sum of this component and the components for observers and residual, the latter two components having first been divided by four in recognition of the fact that the overall measurement for a class on a variable was the mean of four "occasion" measurements.

(For at least three reasons, this assessment of generalizability is best described as crude, and the results are best described as suggestive: (i) In the design that

was used the variance associated with observation occasions was confounded with variance due to observers. (ii) The proportion of missing data was substantial because, as Table 1 reveals, observers and classes were not completely crossed. (iii) Because the number of observation occasions was relatively small, the estimates of variance components were relatively unstable.)

A low inference observational variable was retained for further study if its estimated generalizability coefficient was 0.5 or more. Eleven of the 37 variables met this criterion.

The third and final stage of the data analysis involved calculating coefficients of correlation within and among three sets of variables. These three sets consisted of the 11 measures derived from the low inference observations, the 21 items of Observer-DISC and the 32 items of Teacher-DISC. A single score had been derived for each class on each low inference measure and each item of Observer-DISC by averaging the scores on these variables over observation occasions. An additional component of this third stage analysis was a analysis of the intercorrelations among the low inference observational variables. This was done to enhance our understanding of these variables and simplify the task of describing the relationships among these variables and the items of DISC.

Results

Factors of the Low-Inference Variables

The coefficients of correlation among the 11 low inference observational variables are presented in Table 2. Inspection of this table suggests what was confirmed by an

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Insert Table 2 about here

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iterative principal axes factor analysis (footnote 1), that these variables define three factors (footnote 2) which can be labelled and described as follows:

Factor I: Group Instruction. Classrooms with a relatively high standing on this factor were those for which (a) the number of students engaged by the teacher was relatively frequently observed to be relatively large, (b) the teacher was relatively frequently observed to be more

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1. The first two variables in Table 2 were constructed from the same observations, hence only the second variable was included in the factor analysis.
2. Additional evidence of three factors is provided by the latent roots of the correlation matrix and the residual correlation coefficients for the three-factor solution. The roots are as follows: 4.37, 2.17, 2.05, 0.67, 0.31, 0.21, 0.12, 0.05, 0.03, 0.02. The distribution of residuals (i.e., the differences between the observed correlation coefficients and the coefficients as reproduced by three factors) ranged from -0.14 to 0.11, with a median of 0.00, a 25th percentile of -0.03, and a 75th percentile of 0.03. That (a) three roots were greater than one, (b) there was a substantial break between the third and the fourth root, and (c) the residuals were small are facts which support the decision to fit three factors.

than arm's length from any student, (c) the teacher was relatively frequently observed to be either sitting or standing while engaging a group of students greater in size than one-half the number of students in the class, (d) the teacher was observed relatively frequently to be either reciting to the class or lecturing it, and (e) the teacher was observed relatively frequently to be at the blackboard. This factor distinguishes an instructional strategy focussed on relatively large student groups from one focussed on individuals and relatively small groups. Large group instruction is a characteristic often associated with traditional or formal education.

Factor II: Class Size. This factor is defined by two variables, each related in different ways to class size.

Factor III: Control and Industry. Classrooms with a high standing on this factor were those in which the following three observations were made relatively frequently: (a) student engaged in a productive activity (e.g., reading, working with pencil or pen and paper at his or her desk, constructing something, writing on the blackboard, or watching and either listening or speaking to the teacher), (b) student seated at his or her desk, (c) student using books or other printed material, pen or pencil and writing paper, the blackboard, charts, maps, construction materials or audio-visual equipment. The variables defining this factor derive from the observations

of students. They distinguish classrooms where relatively often the students are observed to be engaged in apparently productive activities while seated at their desks from those in which relatively often the students are observed to be unengaged and away from their desks.

Associations Among Variables Derived from Low Inference Observations and the Items of Teacher-DISC and Observer-DISC

The coefficients of correlation among the low-inference observational variables and the items of Teacher-DISC are presented in Table 3, those among the low-inference observational variables and the items of Observer-DISC in Table 4. A cursory inspection of these tables reveals

Insert Tables 3 and 4 about here

that the items comprising the third factor of the low-inference observations, the factor named Control and Industry, are most closely associated with the items of Teacher-DISC and Observer-DISC. The correlations for those observational variables defining Factor III and the items of DISC, whether responded to by teachers or observers, are negative. This is to be expected if DISC is sensitive to inter-class differences in the extent to which students are seated and engaged during the school day. Classes with high scores on DISC are those in which one would expect to see less control and industry of this traditional kind.

Associations between the Items of Teacher-DISC and Observer-DISC

Each of the 21 items of Observer-DISC corresponded exactly with an item of Teacher-DISC. Coefficients of correlation for the 21 corresponding pairs of items are presented in Table 5. Twenty of these coefficients are

Insert Table 5 about here

positive, as would be expected. The median correlation is 0.55, and the 25th and 75th percentiles of the distribution of 21 coefficients are 0.20 and 0.65, respectively.

An indication of the relatively high degree of agreement realized between the observers' and teachers' ratings on corresponding DISC items is provided by the coefficients of correlation between the scores of observers and teachers on non-corresponding DISC items. The median of the distribution of these 420 coefficients was 0.345, the 25th percentile was 0.135 and the 75th percentile was 0.52. As would be expected, the distribution of correlation coefficients for corresponding items was substantially higher than that for non-corresponding items.

The distribution of correlation coefficients among the ratings of observers and teachers on non-corresponding items of DISC was closer to the distributions of correlation

coefficients among the ratings of observers or teachers, each group taken separately, on non-corresponding DISC items than it was to the distribution of correlation coefficients between observer and teacher ratings on corresponding items of DISC. For observers, the distribution of 210 correlation coefficients for all pairs of non-corresponding items had a median of 0.42, a 25th percentile of 0.21 and a 75th percentile of 0.59. The corresponding statistics for the distribution of correlation coefficients for the teachers were as follows: median = 0.29; 25th percentile = 0.08; 75th percentile = 0.50. (The foregoing results are provided as an aid to evaluating the extent of agreement between the ratings of observers and teachers to the same items of DISC. We do not know of a statistical test that could have been used to make the comparisons of interest.)

Three of the DISC items rated by both observers and teachers were associated with coefficients of correlation that were negative or near zero. These were the items for Evaluation Procedures, Time Scheduling and Flexibility of Environment. (The latter item is adressed to the question of who it is - administrators, teachers, or students - that decide the arrangement of the furniture and equipment in the class. Evaluation Procedures is about the types of tests and other evaluation instruments used in student evaluation. Time Scheduling is concerned with the amount of time that is blocked into scheduled activities as opposed to unscheduled activities.) One of these items, Evaluation Procedures,

proved very difficult for observers to rate; it was not rated on 34 of 62 observer rating occasions. This result should be compared with the fact that 12 items of Observer-DISC were rated on all 62 occasions, that four items were rated on all but one occasion, and that the remaining four items were rated on all but four, seven, 11 and 13 occasions respectively. Even though the other two items, Time Scheduling and Flexibility of Environment, were rated on all 62 observation occasions, these items, along with Evaluation Procedures, pertain to facets of school life that are difficult to apprehend and describe after as little as one-half of a day observing in class. These items should not have been included in Observer-DISC.

Discussion and Conclusions

We began this study with a question about the accuracy of teachers' self-reports. The data that were examined in the effort to answer this question included teacher self-reports, which in this case required reasonably high inference judgments, and observer reports, which included both low inference judgments and ratings at the same relatively high inference level as the teacher self-reports. The high inference data indicate a moderate to substantial degree of correspondence between the ratings of teachers and observers, contrary to what the Hook and Rosenshine review would lead us to expect. The low inference data also attest to the validity that teacher self-reports can attain; the

variables constructed from the observers' low inference data correlated with teacher self-reports to the same moderate degree as they did with the high inference reports of the observers themselves.

On another front, the results obtained in this study add to the evidence reported elsewhere (Darte, 1980; Fagan, 1978; Fisher, 1972, 1973; Larter, 1976; Traub et al, 1972; Traub, Weiss & Fisher, 1974, 1976; Traub & Weiss, 1978; Weiss, 1973) on the validity of Teacher-DISC. One of the added findings is that the between-class differences in style of class management, instructional strategy, curriculum and resources, and student participation in decision making, as assessed through responses of the class teachers to Teacher-DISC, showed moderate correspondences, at the item level, with the between-class differences found in the observers' ratings on Observer-DISC. The same-item correlations between Teacher-DISC and Observer-DISC were greater than the different-item correlations, as must be the case for this evidence to merit our attention.

Another of the added findings on the validity of DISC is that, whether completed by the class teacher or the observer, scores on this instrument correlated to a moderate degree with at least some of the variables constructed from the low inference observations. The evidence here was less specific in the sense that it did not involve expectations about the correlations between individual items of DISC and

individual variables constructed from the observations. Nevertheless, the correlations were in the direction that one would expect a priori given the conception of open education that underlies DISC (see Traub et al, 1972). The strongest associations, which were negative, were found between DISC items and the low inference observational variables that defined Factor III: Control and Industry. These observational variables differentiated classes principally by the extent to which students were seated at their desks at work on pencil and paper activities. The impression of control and industry that these variables create for classes with relatively high scores runs counter to some conceptions of open education (Traub et al, 1972; Traub & Weiss, 1978). The open classroom is often characterized by considerable student movement, with students free to work at places and in positions other than seated at their desks. The latter characteristic of classroom management is one that DISC was designed to detect, and apparently it does so with some success.

The main conclusion of this study is that teacher self-reports may provide a better source of data about teaching than previouly believed. This conclusion should be held tentatively, however, for several reasons, all of which constitute limitations of the present study:

(i) The sample size was very small, and the 16 classes were not independent, selected as they were, two per school.

(ii) The study was conducted in a particular context, one which is not necessarily representative of the contexts in which studies of teaching are typically conducted.

(iii) The facets of teaching that were studied, which stem from a conception of open education, are not necessarily those of interest to other students of the teaching process.

Despite these limitations, the present results do call into question the widely held belief that teacher self-reports are untrustworthy. Our hope is that this study will stimulate other researchers also to challenge this belief with empirical research, not rhetoric.

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Table 1

Realized Allocation of Observers and Half-Days to Observation Occasions in Eight Schools (16 Classes)

School Number	Architecture	Teacher Number (Within-School)	Occasion 1	2	3	4
02	Open	04	2-pm (12)	7-pm (16)	4-pm (15)	5-am (16)
		14	2-am (17)	7-am (11)	4-am (20)	5-am (16)
23	Open	12	3-am (10)	2-am (23)	4-am (17)	5-pm (22)
		30	1-am (8)	2-pm (11)	4-pm (15)	5-am (23)
29	Closed	11	1-am (14)	2-pm (16)	6-am (16)	6-pm (24)
		12	2-am (17)	7-am (15)	5-pm (24)	a
45	Open	11	2-pm (12)	4-am (21)	5-pm (17)	6-pm (17)
		16	2-am (17)	4-am (13)	5-am (20)	6-am (9)
46	Closed	15	3-am (14)	2-pm (11)	6-am (15)	4-pm (14)
		30	1-am (22)	2-am (15)	6-am (21)	4-am (21)
53	Mixed	14	2-pm (13)	1-am (24)	4-am (24)	5-am (28)
		29	2-am (19)	5-am (11)	4-am (20)	a
70	Closed	08	4-am (11)	2-pm (20)	5-pm (18)	6-pm (16)
		16	2-am (17)	5-am (17)	6-am (15)	7-am (16)
79	Mixed	07	2-am (18)	4-am (21)	5-pm (19)	6-pm (18)
		08	2-am (19)	7-am (21)	5-pm (14)	4-am (19)

Notes: 1. The numbers preceding 'am' and 'pm' in this table are the code numbers of the observers.
2. The number in brackets is the number of observation forms completed by the observer during the observation session.

[a]A fourth observation occasion could not be arranged because the teacher was absent from the classroom for an extended period of time.

Table 2

Coefficients of Correlation Among 11 Variables
Derived from the Low-Inference Observations
(N=16)

	1	2	3	4	5	6	7	8	9	10	11
1	100	-93	74	89	65	66					
2	-93	100	-89	-81	-69	-64			-42		
3	74	-89	100	63	64	48			43		
4	89	-81	63	100	71	77			52		
5	65	-69	64	71	100	84			40		
6	66	-64	48	77	84	100		47	40		
7							100	-88			
8						47	-88	100			
9		-42	43	52	40	40			100	73	61
10									73	100	52
11									61	52	100

Note: Decimal points have been omitted; only those coefficients of correlation greater than 0.39 are reported.

Variable Codes

1: Number of students engaged by teacher: Mean over observations.
2: Number of students engaged by teacher: Proportion of observations for which this number was less than 10.
3: Proximity of teacher to students: Proportion of observations for which the teacher was beyond arm's length.
4: Position of teacher: Proportion of observations for which the teacher was standing or sitting and was involved with more than one-half of the students in the class (as opposed to being involved with fewer students).
5: Activity of teacher: Proportion of observations for which the teacher was engaged in recitation and lecturing.
6: Tools and materials of teacher: Proportion of observations for which the teacher was using the blackboard.
7: Number of students in the subject group: Proportion of observations for which the number of students using the same materials/engaged in the same activity as the student under observation was less than 28.
8: Number of students in the class area: Mean over observations.
9: Activities of students: Proportion of observations for which the student was observed to be reading, working with pen or pencil and paper at his or her desk, constructing something, writing on the blackboard, or watching and either listening or speaking to the teacher.
10: Position of student: Proportion of observations for which the student was seated at his or her desk.
11: Tools and materials of student: Proportion of observations for which the students were using books or other printed matter, pen or pencil and writing paper, the blackboard, charts, maps, construction materials, or audio-visual equipment.

Table 3

Coefficients of Correlation Among the Items of Teacher-DISC and 11 Variables Derived from the Low-Inference Observations (N=14)

DISC Item	Observational Variables[a]										
	1	2	3	4	5	6	7	8	9	10	11
1. Assignment of Students to Teachers											
2. Age Range											-63
3. Time Scheduling				-46					-73		-50
4. Free Time	-59	50		-71		-51		-48	-82	-62	
5. Rule Making		-52	53				45				
6. Rule Enforcing			49				43	-44			
7. Defining General Objectives	-43	49			-56	-53					
8. Content Organization							46	-62	-59	-63	-50
9. Determining Instructional Objectives			-46		-49	-46			-54		
10. Development of Materials									-69		-66
11. Selection of Materials									-64	-65	
12. Student Mobility									-68	-55	-58
13. Flexibility of Environment									-56	-72	-46
14. Learning Environment				-46					-64	-77	-50
15. Student Pacing	-47	48	-42	-43					-55	-57	
16. Independent Study Time	-43	45	-42	-54	-41	-47			-94	-64	-50
17. Student Interaction								-40			
18. Formulating Approaches to Learning										-50	
19. Peer Group Assistance	-50			-50					-58	-44	
20. Other Adult Involvement		42							-47		
21. Cooperative Planning											
22. Media Usage										-40	-40
23. Teacher Focus	-40			-43					-53	-80	
24. Teacher Role								-45	-49	-57	-51
25. Subgrouping Criteria	49	-41									-49
26. Subgrouping Stability			-40			-53			-58		-40
27. Promotion Timing									-81	-75	-52
28. Evaluation Focus										-59	
29. Timing of Evaluation											
30. Student Role in Evaluation			-45				-43				
31. Evaluation Procedures										41	
32. Student Mobility in the Class Area											

[a]The identification codes for these variables are defined in Table 2.

Note: Decimal points have been omitted; only those coefficients of correlation greater than 0.39 are reported.

Table 4

Coefficients of Correlation Among the Items of Observer-DISC and 11 Variables Derived from the Low Inference Observations (N=16)

DISC Item	Observational Variables[a]										
	1	2	3	4	5	6	7	8	9	10	11
3. Time Scheduling									-66	-55	-80
4. Free Time									-77	-62	-76
6. Rule Enforcing									-48	-41	-67
8. Content Organization	40										-55
9. Determining Instructional Objectives										-48	
10. Development of Materials	53	-44									-58
11. Selection of Materials									-45	-54	
12. Student Mobility									-80	-47	-73
13. Flexibility of Environment				-50	-47	-42			-84	-62	-46
14. Learning Environment									-60	-82	
15. Student Pacing									-70	-71	
16. Independent Study Time									-76	-79	-66
17. Student Interaction			-42	-41	-42				-82	-59	-60
18. Formulating Approaches to Learning									-70	-51	-53
19. Peer Group Assistance									-82	-70	-62
20. Other Adult Involvement		40	-45								
21. Cooperative Teaching				40		48					
22. Media Usage									-53	-71	-49
23. Teacher Focus	-75	67	-53	-68	-56	-50		-47	-48	-49	
24. Teacher Role		40			-46				-75	-75	
31. Evaluation Procedures			-50				-64	45			

[a]The identification codes for these variables are defined in Table 2.

Note: Decimal points have been omitted; only those coefficients of correlation greater than 0.39 are reported.

Table 5

Coefficients of Correlation Between Scores on Corresponding Items of Teacher-DISC and Observer-DISC
(N=14)

DISC Item	
3. Time Scheduling	.27
4. Free Time	.62
6. Rule Enforcing	.01
8. Content Organization	.59
9. Determining Instructional Objectives	.16
10. Development of Materials	.66
11. Selection of Materials	.79
12. Student Mobility	.59
13. Flexibility of Environment	.54
14. Learning Environment	.60
15. Student Pacing	.23
16. Independent Study Time	.78
17. Student Interaction	.01
18. Formulating Approaches to Learning	.54
19. Peer Group Assistance	.33
20. Other Adult Involvement	.19
21. Cooperative Planning	.55
22. Media Usage	.56
23. Teacher Focus	.67
24. Teacher Role	.70
31. Evaluation Procedures	-.26